

FIG. 1

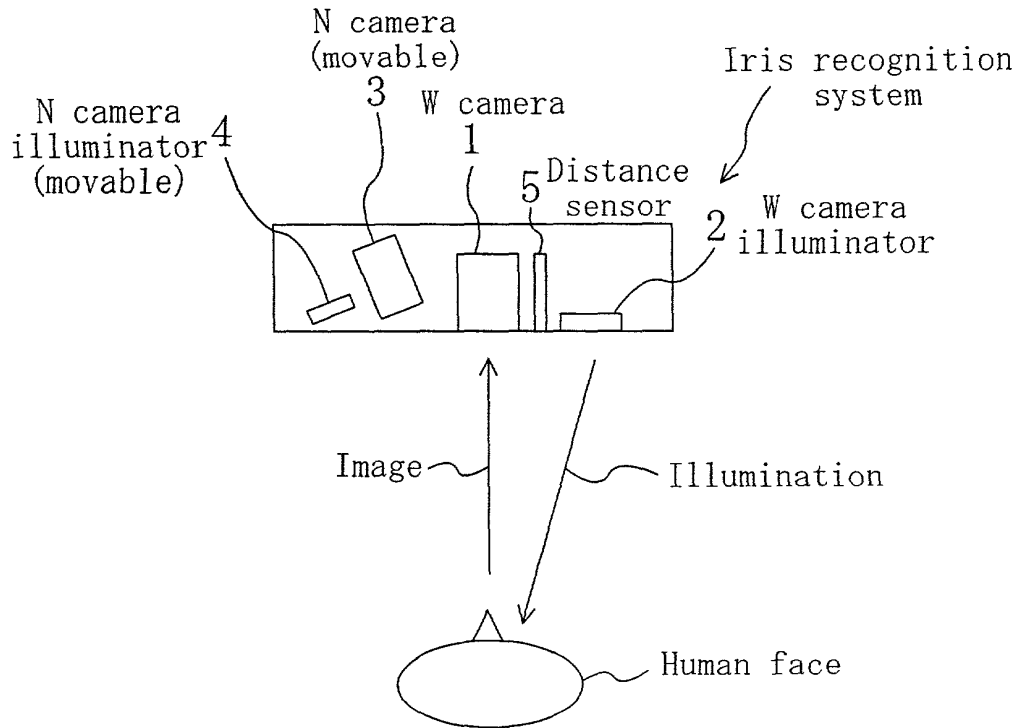


FIG. 2

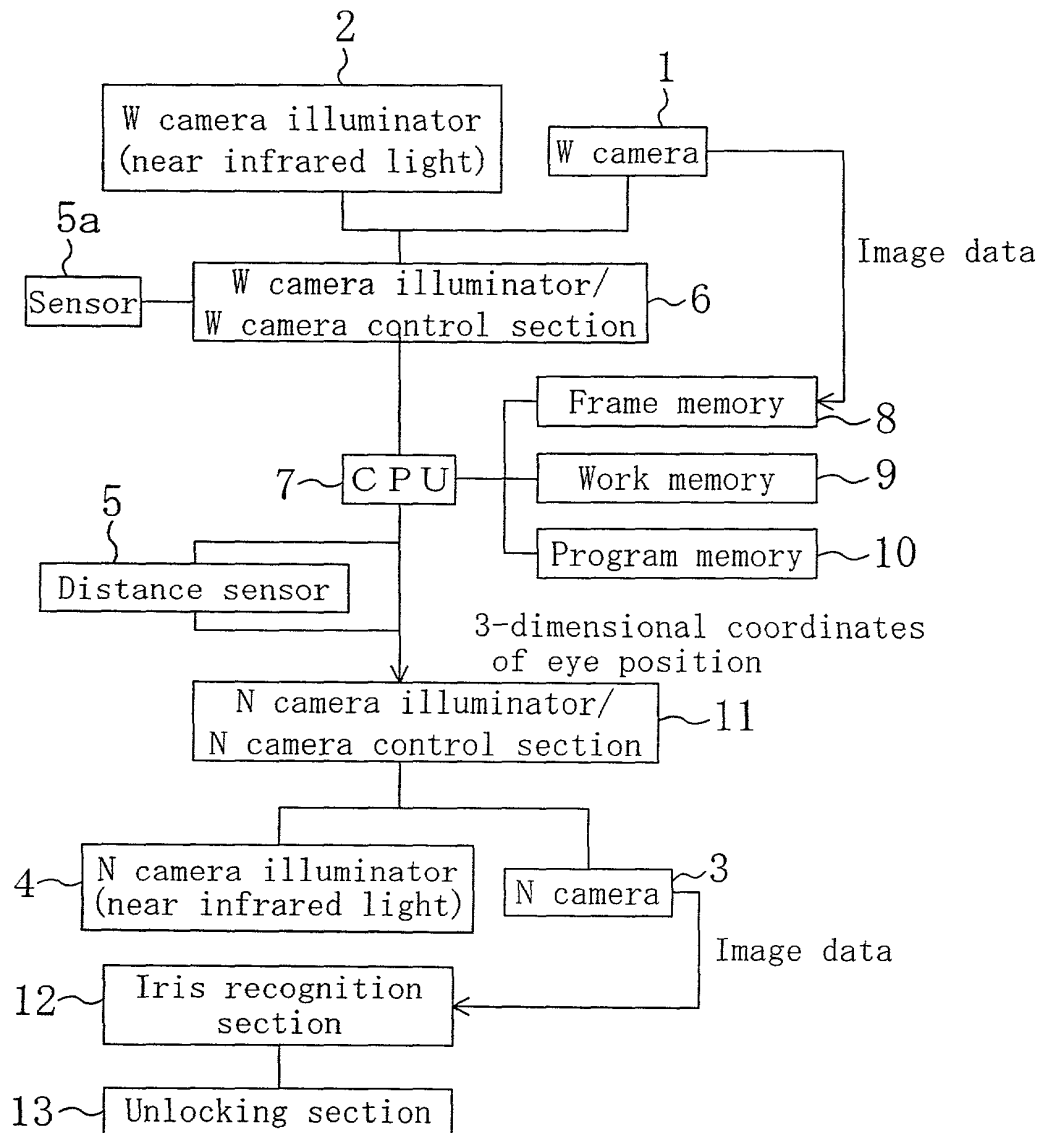


FIG. 3

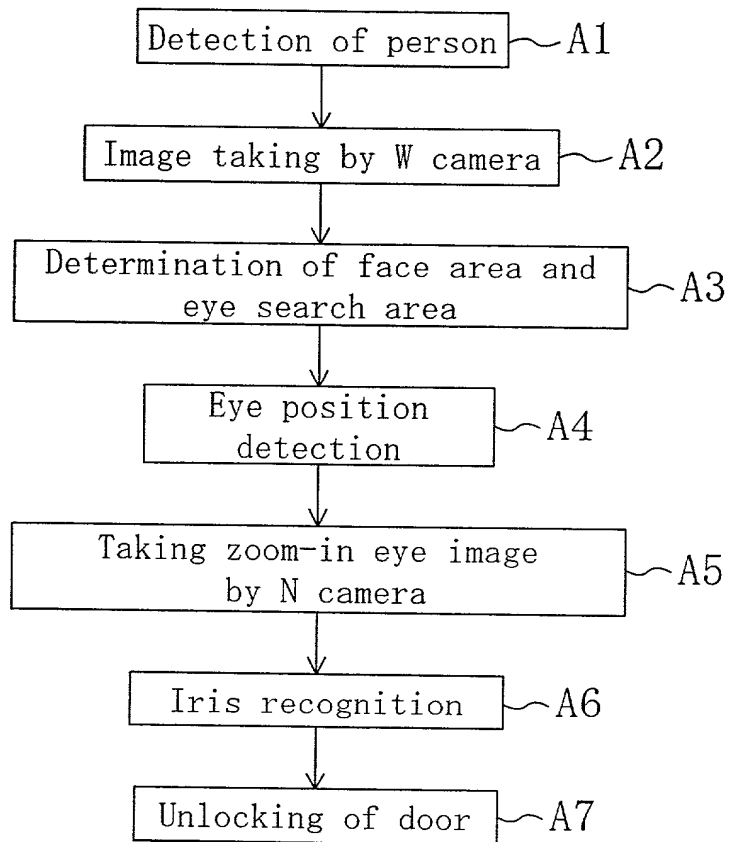
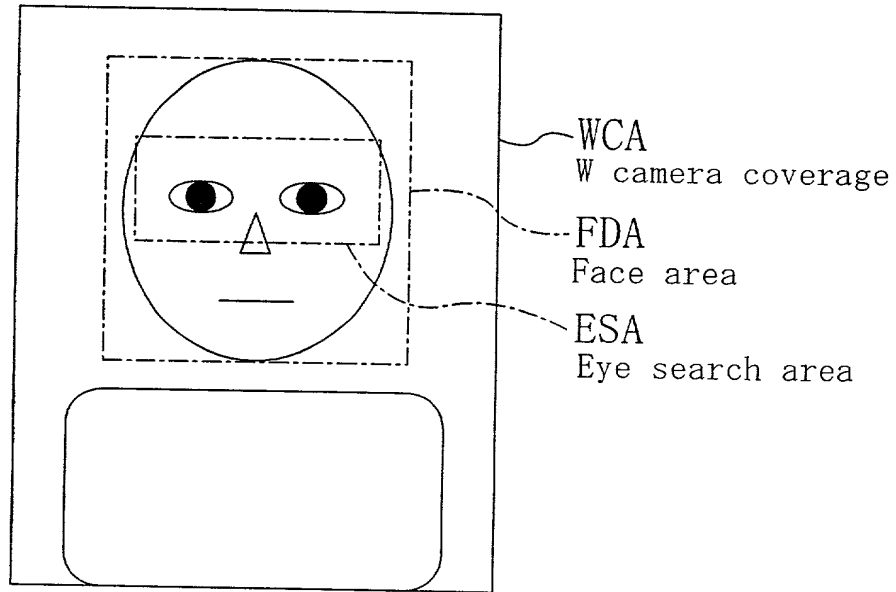


FIG. 4



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FIG. 5

<A4 Eye position detection>

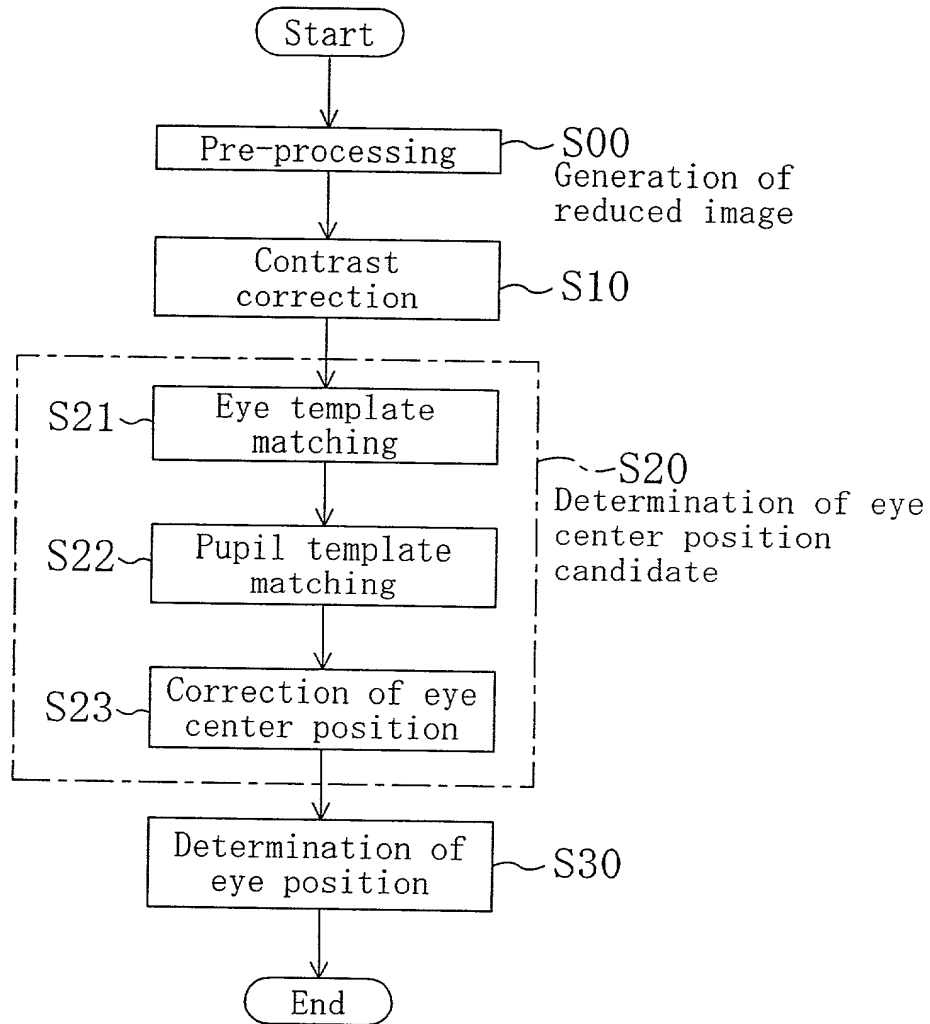
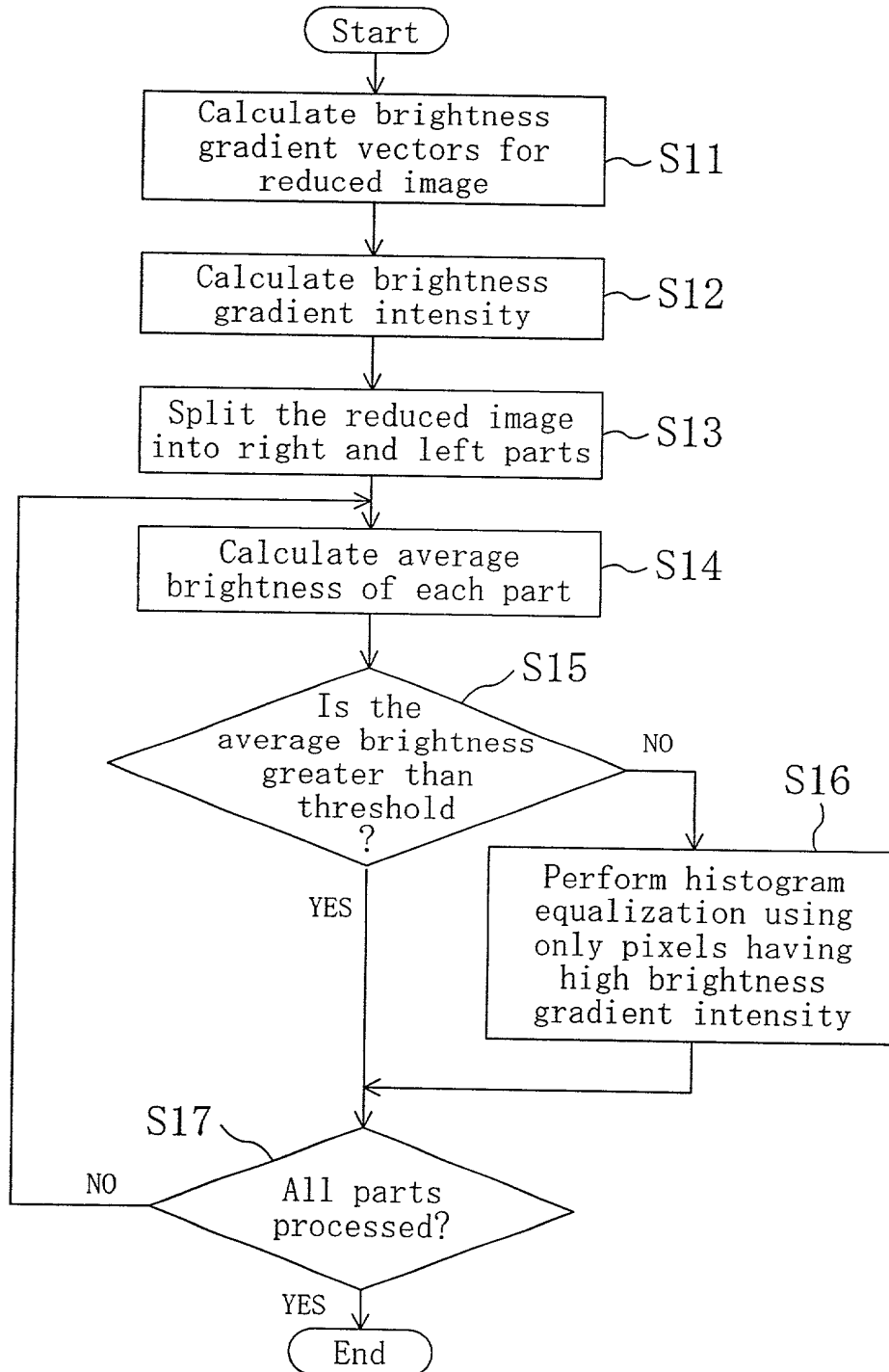


FIG. 6

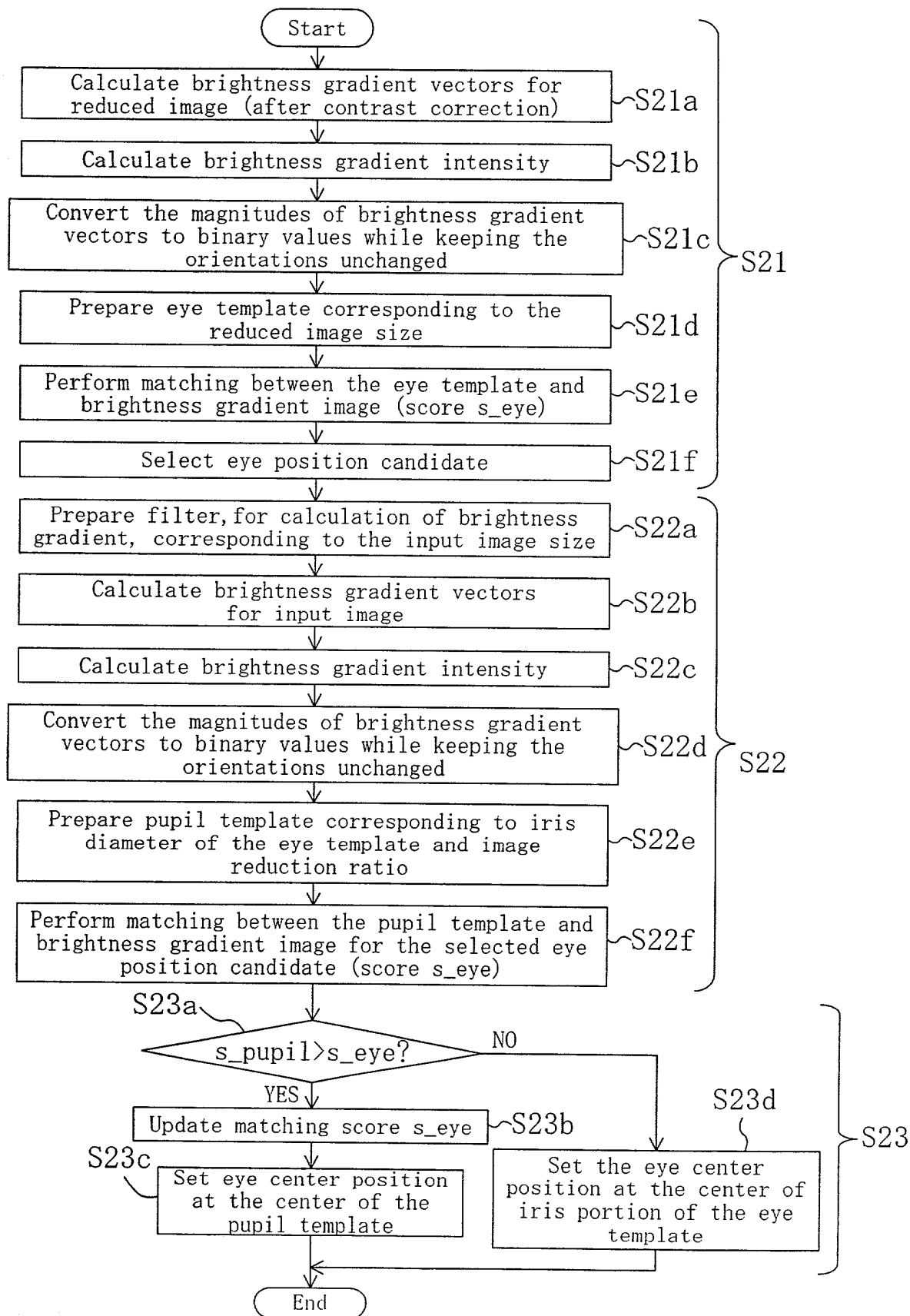
<S10 Contrast correction>



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FIG. 7

<S20 Determination of eye center position candidate>



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FIG. 8

<S30 Determination of eye position>

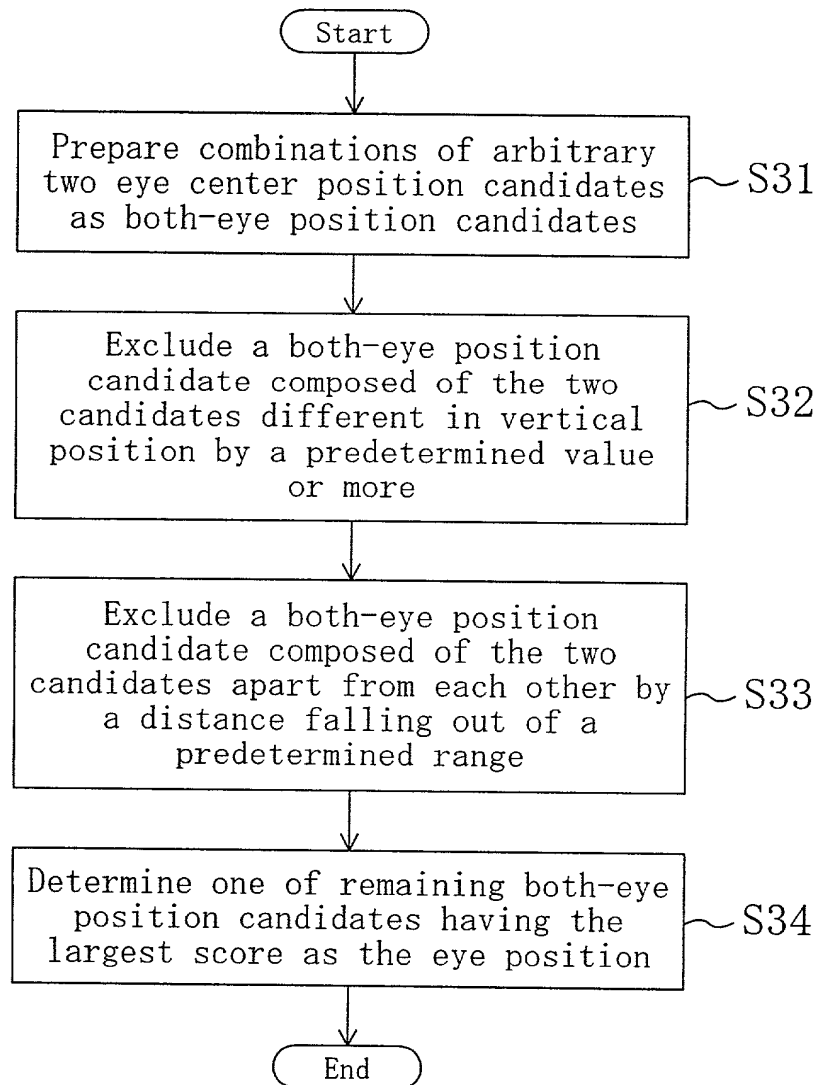




FIG. 9A Under visible light

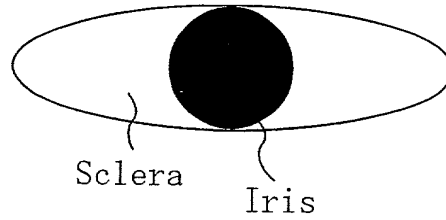


FIG. 9B Under near infrared light

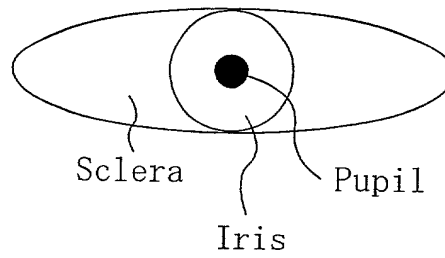


FIG. 10

&lt;Sobel filter&gt;

-1	0	1
-2	0	2
-1	0	1

x direction

-1	-2	-1
0	0	0
1	2	1

y direction

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FIG. 11A

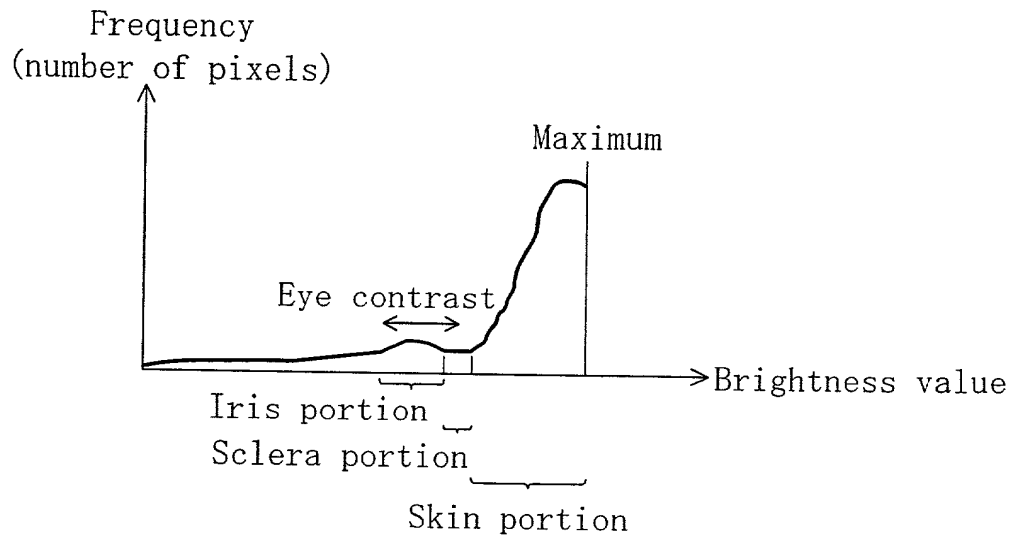
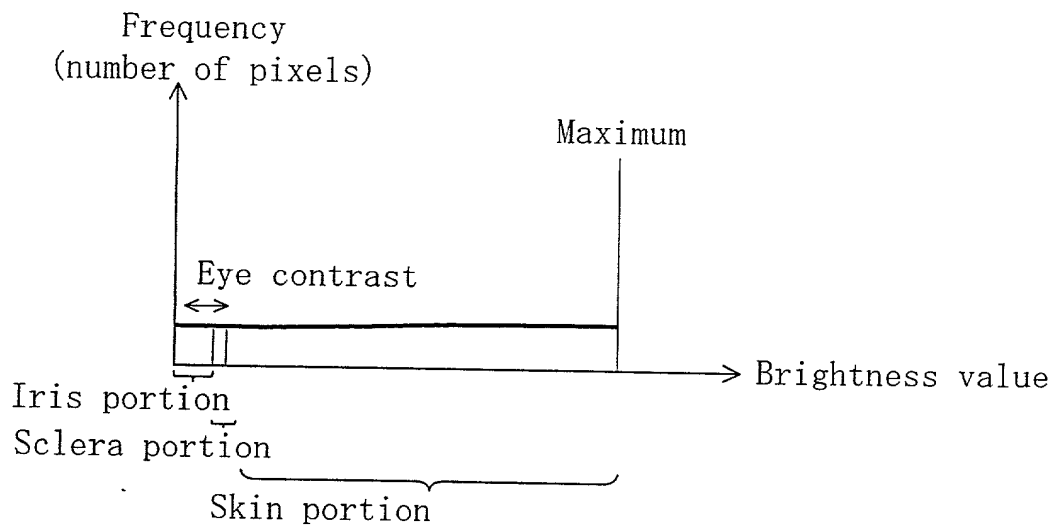


FIG. 11B



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FIG. 12

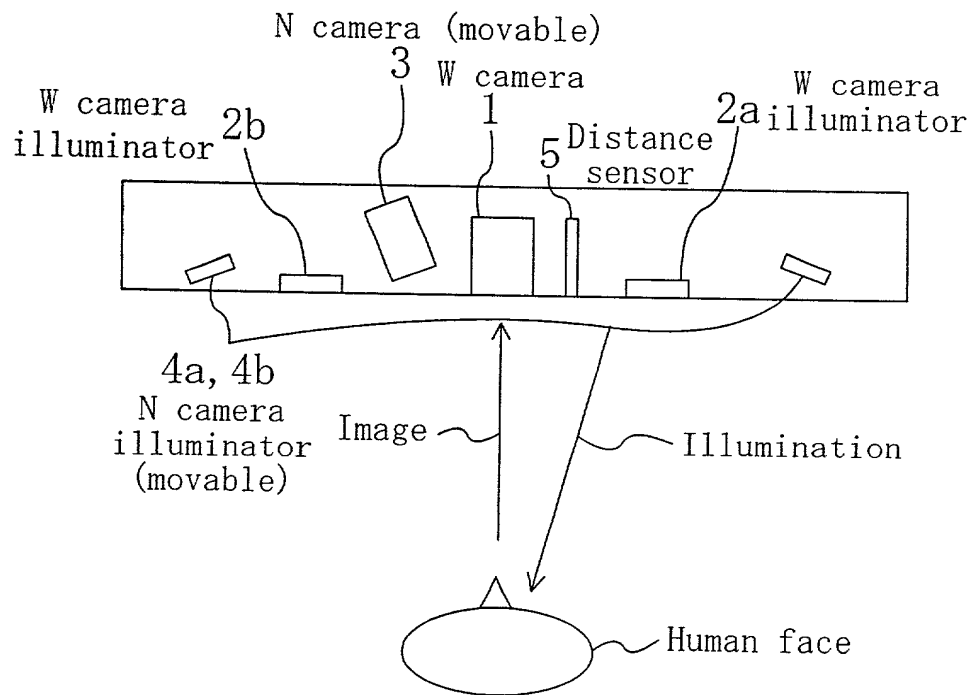


FIG. 13A

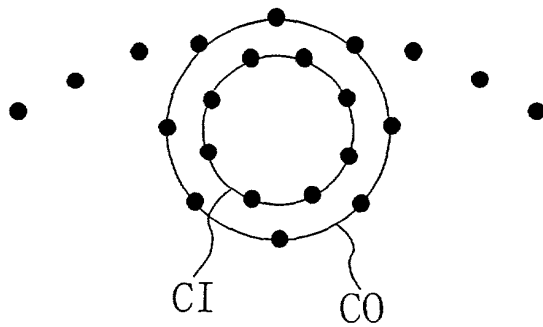


FIG. 13B

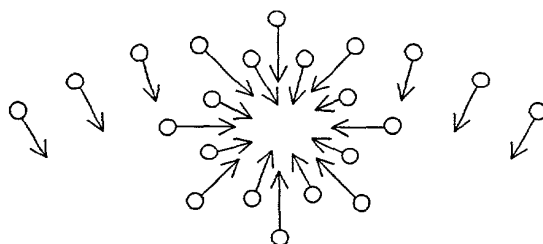


Image taken under visible light

FIG. 14A

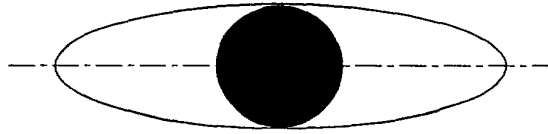


FIG. 14B

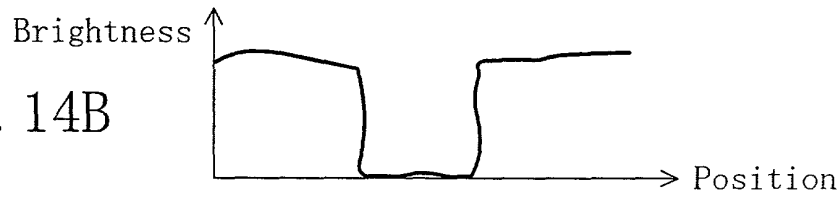


FIG. 14C

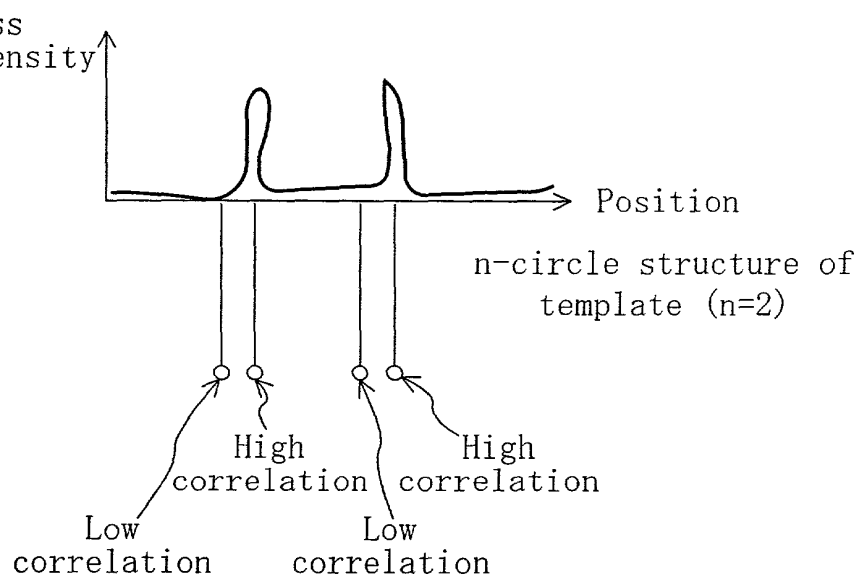


Image taken under near infrared light

FIG. 15A

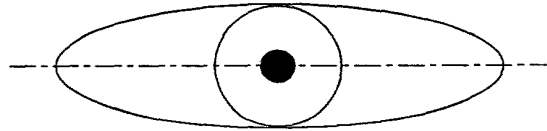


FIG. 15B

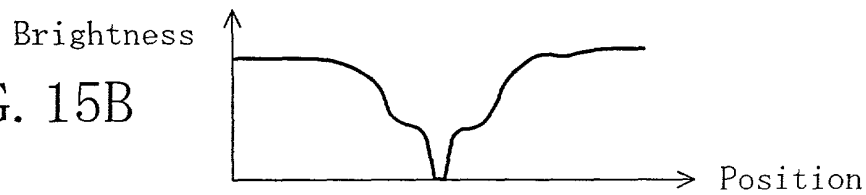
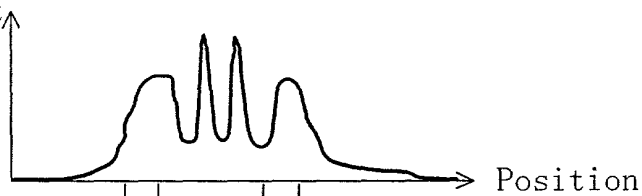


FIG. 15C

Brightness gradient  
intensity



n-circle structure of  
template (n=2)

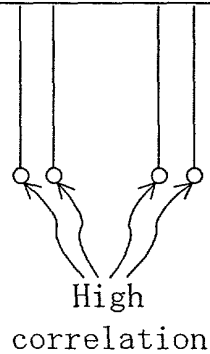


FIG. 16A

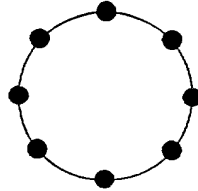


FIG. 16B

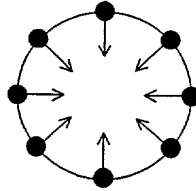




FIG. 17

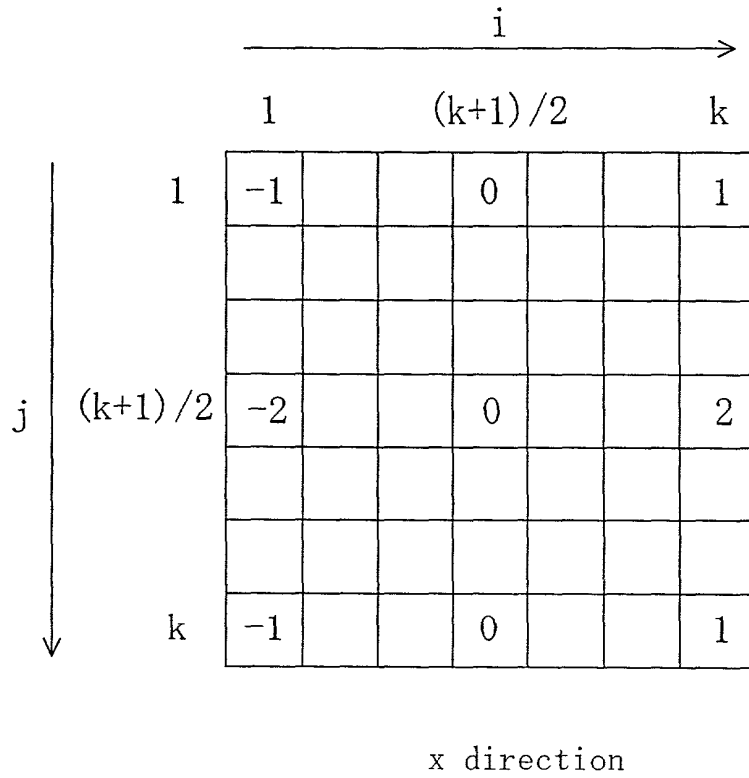


FIG. 18

-1	-0.63	0	0.63	1
-1.68	-1.06	0	1.06	1.68
-2	-1.26	0	1.26	2
-1.68	-1.06	0	1.06	1.68
-1	-0.63	0	0.63	1

x direction

-1	-1.68	-2	-1.68	-1
-0.63	-1.06	-1.26	-1.06	-0.63
0	0	0	0	0
0.63	1.06	1.26	1.06	0.63
1	1.68	2	1.68	1

y direction

FIG. 19A

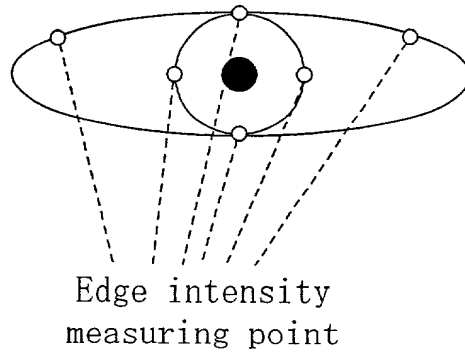


FIG. 19B

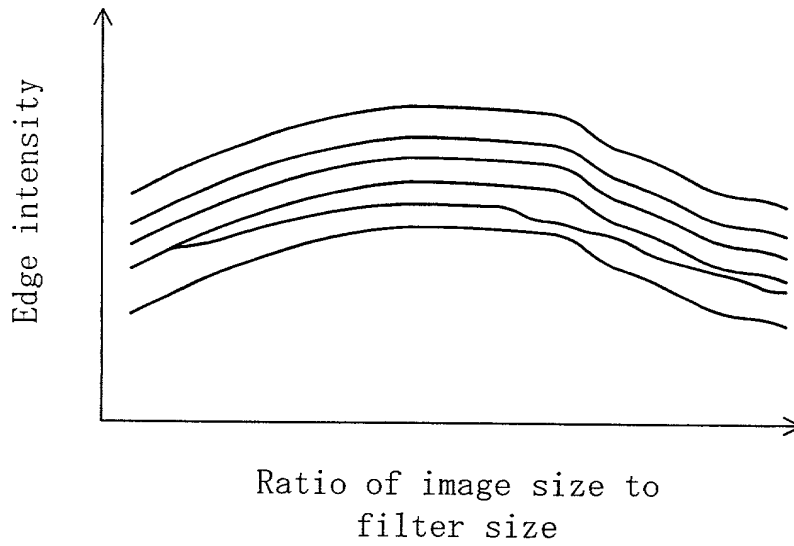


FIG. 20

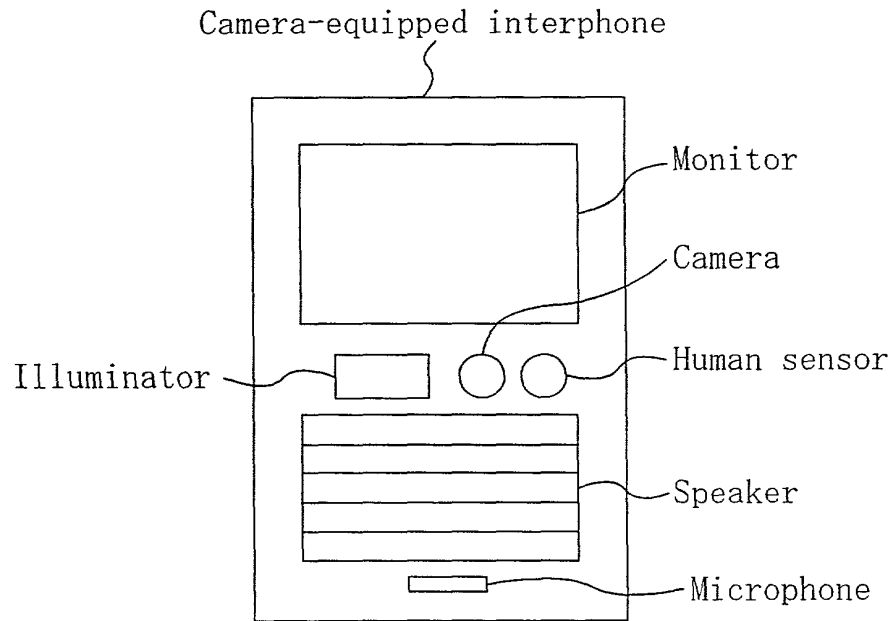


FIG. 21

